

In the Claims:

Please cancel Claims 3, 4 and 9, without prejudice, and amend Claims 1 and 10 as indicated below. The status of all claims is as follows:

1. (Currently Amended) A magnetoresistive spin-valve sensor comprising:
a magnetic layer; layer, the magnetic layer forming a free layer and having an effective magnetic layer thickness, excluding a thickness of a magnetically dead layer, greater than 0 and less than approximately 40Å;
another magnetic layer which forms a pinned layer;
a spacer layer interposed between the two magnetic layers;
a specular layer made of a metal oxide;
a back layer, made of AuCu, AgCu, AuAgCu or an alloy thereof, interposed between the magnetic layer and the specular layer; and
a metal layer disposed adjacent to the specular layer, opposite to the back layer, and made of a metal which improves GMR performance of the magnetoresistive spin-valve ~~sensor~~; sensor, wherein the metal layer is made of a material selected from a group of Ta, Ru, Ni, Fe, Pd, Pt, Mn, Cu, Co, Ti, V, Cr, Zn, Y, Zr, Nb, Mo, Rh, Ag, Au, Hf, W, Re, Os, Ir, Nb and alloys thereof.

2. (Original) The magnetoresistive spin-valve sensor as claimed in claim 1, wherein the specular layer is made of a material selected from a group of CoO, Co₃O₄, Co₂O₃, Cu₂O, CuO, Al₂O₃, NiO, FeO, Fe₂O₃, MnO, TiO₂ and alloys thereof.

3. (Cancelled)

4. (Cancelled)

5. (Previously Presented) The magnetoresistive spin-valve sensor as claimed in claim 1, wherein the back layer has a thickness of approximately 20 Å or less.

6. (Previously Presented) The magnetoresistive spin-valve sensor as claimed in claim 1, wherein the back layer is made of a Au_{1-x}Cu_x alloy, where x denotes a fraction of Cu in the alloy greater than 0.0 and less than 1.0.

7. (Previously Presented) The magnetoresistive spin-valve sensor as claimed in claim 1, wherein the back layer is made of a Ag_{1-x}Cu_x alloy, where x denotes a fraction of Cu in the alloy greater than 0.0 and less than 1.0.

8. (Previously Presented) The magnetoresistive spin-valve sensor as claimed in claim 1, wherein the back layer is made of a Au_{1-x-y}Ag_yCu_x alloy, where x denotes

a fraction of Cu in the alloy, y denotes a fraction of Ag in the alloy, and x and y respectively are greater than 0.0 and less than 1.0 so that $x+y$ is less than 1.0.

9. (Cancelled)

10. (Currently Amended) A magnetic storage apparatus for reading information from a magnetic recording medium, ~~comprising:~~ including:

a magnetoresistive spin-valve sensor which reads the information from the magnetic recording medium,

said magnetoresistive spin-valve sensor comprising:

a magnetic layer; layer, the magnetic layer has an effective magnetic layer thickness, excluding a thickness of a magnetically dead layer, greater than 0 and less than approximately 40Å;

another magnetic layer which forms a pinned layer;

a spacer layer interposed between the two magnetic layers;

a specular layer made of a metal oxide;

a back layer, made of AuCu, AgCu, AuAgCu or an alloy thereof, interposed between the magnetic layer and the specular layer; and

a metal layer disposed adjacent to the specular layer, opposite to the back layer, and made of a metal which improves GMR performance of the magnetoresistive spin-valve sensor.

11. (Previously Presented) The magnetoresistive spin-valve sensor as claimed in claim 1, wherein:

the specular layer is made of a material selected from a group of CoO, Co₃O₄, Co₂O₃, Cu₂O, CuO, Al₂O₃, NiO, FeO, Fe₂O₃, MnO, TiO₂ and alloys thereof,

the metal layer is made of a material selected from a group of Ta, Ru, Ni, Fe, Pd, Pt, Mn, Cu, Co, Ti, V, Cr, Zn, Y, Zr, Nb, Mo, Rh, Ag, Au, Hf, W, Re, Os, Ir, Nb and alloys thereof, and

the back layer has a thickness of approximately 20 Å or less and is made of a Au_{1-x}Cu_x alloy, where x denotes a fraction of Cu in the alloy greater than 0.0 and less than 1.0.

12. (Previously Presented) The magnetoresistive spin-valve sensor as claimed in claim 1, wherein:

the specular layer is made of a material selected from a group of CoO, Co₃O₄, Co₂O₃, Cu₂O, CuO, Al₂O₃, NiO, FeO, Fe₂O₃, MnO, TiO₂ and alloys thereof,

the metal layer is made of a material selected from a group of Ta, Ru, Ni, Fe, Pd, Pt, Mn, Cu, Co, Ti, V, Cr, Zn, Y, Zr, Nb, Mo, Rh, Ag, Au, Hf, W, Re, Os, Ir, Nb and alloys thereof, and

the back layer has a thickness of approximately 20 Å or less and is made of a Ag_{1-x}Cu_x alloy, where x denotes a fraction of Cu in the alloy greater than 0.0 and less than 1.0.

13. (Previously Presented) The magnetoresistive spin-valve sensor as claimed in claim 1, wherein:

the specular layer is made of a material selected from a group of CoO, Co₃O₄, Co₂O₃, Cu₂O, CuO, Al₂O₃, NiO, FeO, Fe₂O₃, MnO, TiO₂ and alloys thereof,

the metal layer is made of a material selected from a group of Ta, Ru, Ni, Fe, Pd, Pt, Mn, Cu, Co, Ti, V, Cr, Zn, Y, Zr, Nb, Mo, Rh, Ag, Au, Hf, W, Re, Os, Ir, Nb and alloys thereof, and

the back layer has a thickness of approximately 20 Å or less and is made of a Au_{1-x-y}Ag_yCu_x alloy, where x denotes a fraction of Cu in the alloy, y denotes a fraction of Ag in the alloy, and x and y respectively are greater than 0.0 and less than 1.0 so that x+y is less than 1.0.